S.Q. TUBE

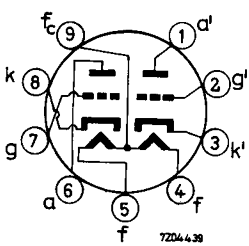
Special quality double triode designed for use in computer circuits.

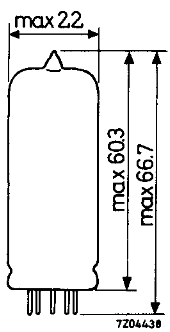
QUICK REFERENCE DATA			
Life test	10 000 hours		
Low interface resistance			
Base	Noval		
Heating	Indirect A.C. or D.C.; parallel supply		
Heater voltage	V_f	6.3 or 12.6	V
Heater current	I_f	400 or 200	mA

DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Noval





CHARACTERISTICS

Column I Nominal value or setting of the tube
II Range values for equipment design: Initial spread
III Range values for equipment design: End of life

		I	II	III	
Heater voltage (pin 9 and 4 and 5)	V_f	6.3			V
Heater current	I_f	400	380 - 420		mA
Heater voltage (pin 4 and 5)	V_f	12.6			V
Heater current	I_f	200			mA
Anode voltage	V_a	150			V
Grid voltage	$-V_g$	1.85			V
Anode current	I_a	8.5			mA
Mutual conductance	S	6.4			mA/V
Amplification factor	μ	46			
Internal resistance	R_i	7.2			kΩ
Anode voltage	V_a	150			V
Cathode resistor	R_k	220			Ω
Anode current	I_a	8.5	6.3 - 10.7	min. 5.0	mA
Mutual conductance	S	6.4	5.3 - 8.1	min. 4.0	mA/V
Negative grid current	$-I_g$		max. 0.2	max. 1.0	µA
Cut off voltage	$-V_g$	7.5			V
Anode voltage	V_a	150			V
Anode current	I_a		max. 150	max. 150	µA
Difference in grid voltage of 2 sections	$\lvert V_g - V_g' \rvert$		max. 2	max. 2	V
Anode voltage	V_a	150			V
Anode current	I_a	0.15			mA

CHARACTERISTICS (continued)

		I	II	III	
Anode voltage	V_a	100			V
Grid voltage	$-V_g$	0.8			V
Anode current	I_a	8.5			mA
Mutual conductance	S	7.8			mA/V
Amplification factor	μ	50			
Internal resistance	R_i	6.4			kΩ
Anode voltage	V_a	100			V
Grid supply voltage	$+V_{bg}$	100			V
Grid resistor	R_g	0.5			MΩ
Anode current	I_a	17.8	13.6 - 22.0	min.9.5	mA
Leakage current between cathode and heater Voltage between cathode and heater V_{kf} = 200 V Series resistor = 1 MΩ	I_{kf}		max. 15	max. 30	µA
Insulation resistance between two electrodes Voltage between electrodes V = 275 V			min. 100	min. 20	MΩ

CAPACITANCES Without external screen

Each system if applicable

		I	II	
Anode to cathode and heater	$C_{a/kf}$	0.5	0.3 - 0.7	pF
Anode to cathode and heater	$C_{a'/k'f}$	0.45	0.25 - 0.65	pF
Grid to cathode and heater	$C_{g/kf}$	3.5	3.0 - 4.0	pF
Anode to grid	C_{ag}	2.2	1.8 - 2.6	pF
Anode to grid	$C_{a'g'}$	2.3	1.9 - 2.7	pF
Cathode to heater	C_{kf}	3.5		pF
Anode to anode other section	$C_{aa'}$		max. 1.3	pF
Grid to grid other section	$C_{gg'}$		max. 0.06	pF

LIFE

Production samples are tested to be within the end of life values (column III) under the following conditions during 10 000 hours.

Anode supply voltage	V_{ba}	150	V
Grid supply voltage	V_{bg}	150	V
Anode resistor	R_a	2.6	kΩ
Grid resistor	R_g	1.5	MΩ (I_g = 100 μA)
Voltage between cathode and heater (k pos)	V_{kf}	200	V

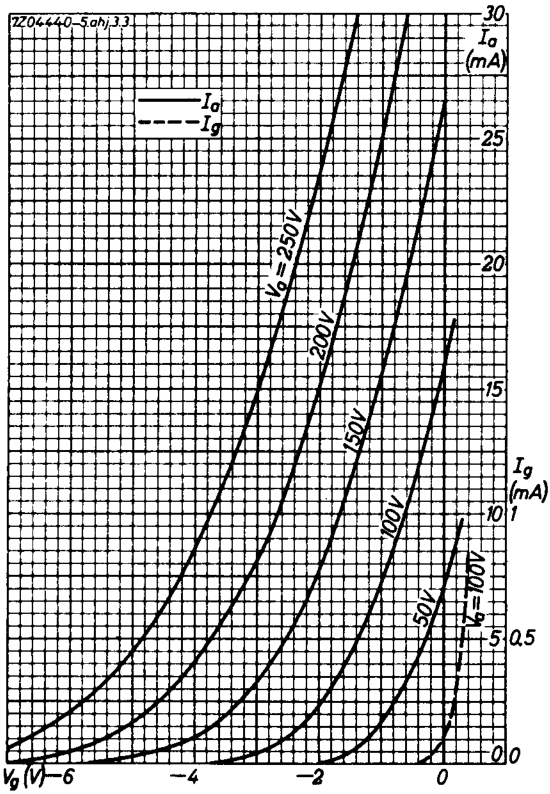
LIMITING VALUES (Absolute max. rating system)

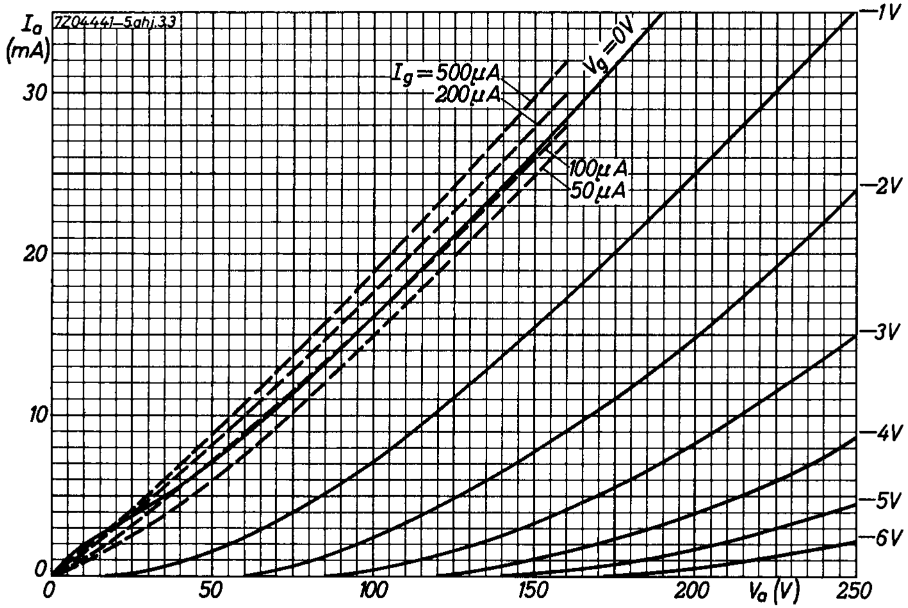
Anode voltage	V_{a_o}	max.	600	V
	V_a	max.	275	V
Anode dissipation	W_a	max.	2.0	W
Grid, voltage	$-V_g$	max.	100	V
Grid, peak voltage	$-V_{g_p}$	max.	200	V
Max. pulse duration = 10 μs				
Max. duty factor = 0.01				
Grid voltage	$+V_g$	max.	1	V
Grid current	I_g	max.	2	mA
Grid, peak current	I_{g_p}	max.	50	mA
Max. pulse duration = 10 μs				
Max. duty factor = 0.01				
Cathode current	I_k	max.	20	mA
Cathode, peak current	I_{k_p}	max.	200	mA
Max. pulse duration = 10 μs				
Max. duty factor = 0.01				

LIMITING VALUES (continued)

Voltage between cathode and heater,			
Cathode positive (k pos.)	V_{kf}	max. 200	V
Cathode negative (k neg.)	V_{kf}	max. 100	V
Grid resistor with fixed bias	R_g	max. 0.5	MΩ
with automatic bias	R_g	max. 1.0	MΩ
Bulb temperature	t_{bulb}	max. 170	°C

Heater voltage: The average heater voltage should be 6.3 V.
Variations of the heater voltage exceeding the range of 6.0 V to 6.6 V will shorten the tube life.
The tolerance of the heater current (column II) should be taken into account.




7Z04441-5ahj.3.3
I_a (mA)
30
20
10
0
0
50
100
150
200
V_a (V)
250
I_g = 500μA
200μA
100μA
50μA
V_g = 0V
-1V
-2V
-3V
-4V
-5V
-6V

PHILIPS

Data handbook

PHILIPS

Electronic components and materials

E180CC

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